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SOLAR OBSERVATIONS

SOLAR RADIATION MEASUREMENTS DURING OCTOBER 1935

By IRVING F. HAND, Assistant in Solar Radiation Investigations

For a description of instruments employed and their exposures, the reader is referred to the January 1935 REVIEW, page 24.

Table 1 shows that solar radiation intensities at normal incidence averaged above the October normals at all three Weather Bureau stations.

Table 2 shows that Madison, Chicago, New York, Fairbanks, and Riverside had an excess in total solar and sky radiation received on a horizontal surface during October while all the other stations were below normal for the month. The thermoelectric pyrheliometers at both Pittsburgh and Mount Washington were recently broken, the former through an unfortunate mechanical accident and the latter by high northeast gales.

Polarization measurements obtained on 8 days at Washington give a mean of 59 percent with a maximum of 62 percent on the 25th. At Madison observations taken on 12 days give a mean of 69 percent with a maximum of 77 percent on the 3d. All of these values are slightly above the corresponding October normals.

TABLE 1.—Solar radiation intensities during October 1935

[Gram-calories per minute per square centimeter of normal surface]

WASHINGTON, D. C.

TABLE 1.—Solar radiation intensities during October 1935—Contd.

[Gram-calories per minute per square centimeter of normal surface]

MADISON, WIS.

Date	75th mer. time	Sun's zenith distance									Local mean solar time	
		8 a. m.	78.7°	75.7°	70.7°	60.0°	0.0°	60.0°	70.7°	75.7°		
		Air mass										
		A. M.								P. M.		
e		5.0	4.0	3.0	2.0	1.0	2.0	3.0	4.0	5.0	e	
Oct. 1		6.02		1.12	1.30	1.37					6.02	
Oct. 3		3.45		1.11	1.27	1.42					3.45	
Oct. 4		3.63		1.20	1.29	1.46	1.61	1.40			2.74	
Oct. 5		3.81		1.08	1.23						2.87	
Oct. 7		3.81				1.20	1.49	1.15			3.99	
Oct. 9		7.29		.54							9.14	
Oct. 14		9.83	0.79	.89	1.01	1.18					9.83	
Oct. 15		7.87	.81	.93	1.10	1.28	1.56				7.29	
Oct. 18		5.36	.98	1.08	1.21	1.37	1.50	1.36			6.27	
Oct. 19		5.56	.95	1.04	1.19	1.36					6.76	
Oct. 23		4.75			1.12	1.25	1.42	1.59			3.63	
Oct. 24		4.37				1.20	1.30	1.53			3.45	
Oct. 25		3.99		.94	1.00	1.12	1.34	1.63			4.17	
Means				.89	1.01	1.20	1.34	1.56	1.30			
Departures		+.10	+.09	+.15	+.14	+.13	+.10					

LINCOLN, NEBR.

Oct. 1	4.37						1.60	1.37	1.21	1.06	0.96	4.57
Oct. 3	5.16		1.03	1.10	1.27	1.58	1.35	1.15	1.03	.93	5.56	
Oct. 5	3.63		.90	1.11	1.29	1.50		1.09	.89	.67	.54	3.15
Oct. 8	7.29							1.53	1.28	1.08	.93	5.79
Oct. 14	5.79								1.33	1.18	1.05	.93
Oct. 17	8.81								1.39	1.28	1.16	1.03
Oct. 18	6.27	0.87	.96	1.17	1.30	1.59	1.37	1.16	1.03	.88	5.56	
Oct. 19	7.04	.84	.93	1.06	1.34				1.41	1.24	1.16	1.02
Oct. 23	3.45	.84	.90	1.15	1.40				1.42	1.33	1.22	1.15
Oct. 24	3.45	.84	.90	1.15	1.40				1.33	1.28	1.16	1.02
Oct. 28	6.27		.82	1.13	1.34	1.56	1.33	1.22	1.08	1.01	.91	3.63
Means			.85	.82	1.13	1.34	1.56	1.33	1.22	.99	.88	
Departures			+.02	-.01	+.04	+.05	+.08	+.08	+.04	+.05	+.05	

BLUE HILL, MASS.

Oct. 1	7.4	0.92	0.99	1.08	1.23	1.40	1.18	1.04	0.91			9.9
Oct. 2	5.6			1.27	1.36	1.51	1.25	1.04				6.7
Oct. 3	7.9			1.05	1.27	1.40	1.11	1.01				8.8
Oct. 4	6.8			1.17	1.40	1.28	1.09	.88				5.2
Oct. 5	4.6	1.10	1.18	1.28	1.39	1.45	1.28	1.08	.88			6.5
Oct. 7	3.6							1.31	1.16	.84		3.6
Oct. 8	3.8	1.04	1.06	1.15	1.31	1.15	1.07	1.02	.86			8.2
Oct. 9	6.3	1.00	1.10	1.21	1.34	1.46	1.28	1.00	.86	.74		6.1
Oct. 10	7.1	1.07	1.18	1.29	1.39	1.47	1.32	1.04	.82	.70		6.1
Oct. 11	9.9	1.04	1.13	1.22	1.34	1.37	1.24	1.11	.82			11.0
Oct. 12	5.8	1.08	1.14	1.21	1.33	1.44	1.26	1.11	.80	.48		5.6
Oct. 13	5.2	1.03	1.10	1.19	1.34	1.44	1.26	1.03	.85	.70		5.8
Oct. 14	9.2		.92	1.00	1.15			1.05	.73			9.2
Oct. 15	9.6			.85	1.12			1.19	.94	.78	.64	6.3
Oct. 16	3.8	1.00	1.11	1.24	1.38			1.23	.96	.75	.52	3.7
Oct. 17	3.3	1.00	1.10	1.22	1.38			1.38	1.13	.83		5.4
Oct. 19	5.6	1.06	1.13	1.20	1.26							6.8
Oct. 20	5.2	1.07	1.12	1.13	1.21			1.04	.93	.82	.67	6.3
Oct. 21	6.5							1.14	.82	.59		7.4
Oct. 24	3.2	1.10	1.18	1.24	1.36			1.35	1.18	.88	.63	4.2
Oct. 25	3.2	1.17	1.20	1.28								3.3
Oct. 27	5.2			1.22	1.20			1.25	1.20	1.19		3.8
Oct. 28	8.2	.94	.99	1.06	1.13							2.1
Means				1.04	1.09	1.18	1.29	1.41	1.22	1.03	.85	.64

¹ Extrapolated.

TABLE 2.—Average daily totals of solar radiation (direct+diffuse) received on a horizontal surface

Week beginning—	Gram-calories per square centimeter													
	Washington	Madison	Lincoln	Chicago	New York	Fresno	Fairbanks	Twin Falls	La Jolla	New Orleans	River-side	Friday Harbor	Ithaca	San Juan
Oct. 1.....	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.
Oct. 8.....	394	334	383	262	372	446	77	387	347	477	316	240	223	701
Oct. 15.....	283	198	250	239	308	346	70	303	343	301	347	204	323	560
Oct. 22.....	330	243	244	262	308	435	84	319	436	298	390	150	309	494
	278	196	219	181	241	406	83	306	402	204	375	184	209	496
Departures from weekly normals														
Oct. 1.....	+58	+57	+47	+18	+90	+11	-21	-2	-----	+124	-5	-----	-----	-----
Oct. 8.....	-27	-46	-55	+27	+35	-114	-6	-64	-----	-44	-6	-----	-----	-----
Oct. 15.....	+47	+23	-56	+70	+96	-2	+19	-36	-----	-12	+3	-----	-----	-----
Oct. 22.....	-88	-6	-56	+7	+47	-14	+27	+6	-----	-81	+13	-----	-----	-----
Accumulated departures on Oct. 28														
	-3,906	-7,966	+5,943	+2,982	+8,174	+4,718	+1,540	+4,116	-----	+980	-6,293	-----	-----	-----

TABLE 3.—Total, I_m and screened, I_s , I_r , solar radiation intensity measurements, obtained during October 1935, and determinations of the atmospheric turbidity factor β , and water-vapor content, w —depth in millimeters, if precipitated

AMERICAN UNIVERSITY, WASHINGTON, D. C.

Date and hour angle, 1935	Solar altitude	Air mass	I_m	I_s	I_r	βI_{m-r}	βI_{s-r}	β_{mean}	I_{w-o}	$\frac{I_{w-o} - I_m}{1.94}$	w	Air-mass type
									1.94	$\frac{I_{w-o} - I_m}{1.94}$		
Oct. 1	°	m	gr. cal.	gr. cal.	gr. cal.	0.094	0.082	0.088	73.6	4.2	mm	N _{sc} -N _{tr} aloft.
0:56 a. m.....	46 09	1.39	1.350	0.961	0.782	.094	.082	.088	73.6	3.6	1.4	1.0
0:53 a. m.....	46 20	1.38	1.358	.961	.782	.090	.084	.087	73.8	-----	-----	-----
Oct. 2	20 35	2.82	1.136	.884	.697	.062	.020	.041	68.9	10.3	5.4	P _c .
4:00 a. m.....	21 06	2.76	1.130	.884	.697	.068	.020	.044	68.4	10.2	5.3	-----
Oct. 3	47 18	1.36	1.321	.930	.736	.080	.054	.067	78.2	10.2	10.2	N _{sc} -N _{tr} aloft.
0:02 p. m.....	47	17	1.36	1.352	.930	.736	.062	.054	78.9	9.2	7.2	-----
Oct. 4	28 55	2.06	1.209	.880	.714	.072	.050	.061	71.9	9.6	5.4	P _c -N _{tr} aloft.
3:04 a. m.....	29 33	2.02	1.217	.890	.714	.072	.050	.061	71.2	8.5	3.8	-----
Oct. 5	19 47	2.93	.954	.749	.617	.102	.072	.087	57.6	8.4	3.3	P _c -N _{tr} aloft., changing to T _r aloft.
3:57 a. m.....	20 19	2.86	.973	.749	.617	.096	.076	.086	57.4	6.2	1.9	-----
Oct. 7	19 09	3.02	1.206	.932	.742	.044	.020	.032	69.8	7.6	2.4	P _c .
3:57 a. m.....	19 40	2.95	1.207	.932	.742	.044	.020	.032	69.3	7.0	2.2	-----
2:40 a. m.....	32 22	1.87	1.362	.994	.786	.046	.020	.033	77.6	7.4	3.0	-----
2:36 a. m.....	32 57	1.84	1.366	.994	.786	.047	.020	.034	77.6	7.2	2.9	-----
Oct. 16	39 20	1.58	1.357	.964	.767	.062	.040	.051	77.6	8.5	4.7	P _c -T _s aloft.
1:14 a. m.....	39 35	1.57	1.353	.964	.767	.062	.040	.051	77.6	8.4	4.6	-----
0:29 a. m.....	41 56	1.49	1.342	.962	.768	.078	.054	.066	77.0	8.4	4.6	-----
0:26 a. m.....	41 57	1.49	1.360	.962	.768	.074	.054	.064	77.0	7.7	3.7	-----
Oct. 17	28 35	2.08	1.284	.962	.776	.070	.040	.055	72.0	6.3	2.4	N _{sc} -T _s aloft.
2:46 a. m.....	28 44	2.07	1.293	.962	.776	.070	.040	.056	72.0	5.9	2.1	-----
0:27 a. m.....	41 47	1.50	1.405	.988	.789	.056	.046	.061	78.4	6.5	2.5	-----
0:22 a. m.....	41 54	1.49	1.398	.988	.789	.065	.046	.060	78.4	6.9	2.6	-----
Oct. 24	39 05	1.53	1.381	.972	.773	.052	.038	.045	78.7	7.4	3.3	N _{sc} .
0:24 a. m.....	39 12	1.58	1.381	.972	.773	.052	.038	.045	78.7	7.0	3.0	-----
Oct. 25	20 06	2.89	1.222	.921	.749	.046	.030	.038	68.4	5.8	1.5	N _{sc} -N _{tr} aloft.
3:22 a. m.....	20 46	2.81	1.240	.924	.751	.046	.032	.039	68.6	5.2	1.4	-----
3:03 a. m.....	24 06	2.44	1.274	.946	.765	.050	.032	.041	72.4	7.1	2.6	-----
2:57 a. m.....	24 58	2.36	1.281	.948	.767	.052	.032	.042	72.6	7.1	2.7	-----
2:21 a. m.....	29 27	2.02	1.304	.971	.774	.068	.024	.046	74.8	7.9	3.4	-----
2:16 a. m.....	30 05	1.99	1.315	.971	.774	.070	.026	.048	74.4	7.0	2.8	-----
1:59 a. m.....	32 03	1.88	1.337	.984	.784	.062	.028	.045	76.0	7.5	3.2	-----
1:56 a. m.....	32 24	1.87	1.342	.984	.784	.060	.027	.044	76.1	7.3	3.1	-----

ATMOSPHERIC CONDITIONS DURING TURBIDITY MEASUREMENTS

- Oct. 1: Temperature, 11° C.; wind, NW. 12; visibility, 30 miles.
 Oct. 2: Temperature, 10° C.; wind, NW. 9; visibility, 50 miles; blueness of sky, 6; polarization, 62 percent.
 Oct. 3: Temperature, 11° C.; wind, SW. 8; visibility, 30 miles; blueness of sky, 5; polarization, 53 percent.
 Oct. 4: Temperature, 9° C.; wind, NW. 12; visibility, 30 miles; blueness of sky, 5; polarization, 56 percent.
 Oct. 5: Temperature, 10° C.; wind, N. 10; visibility, 30 miles.
 Oct. 7: Temperature, 8° C.; wind, N. 11; visibility, 30 miles; blueness of sky, 6; polarization, 61 percent.
 Oct. 16: Temperature, 12° C.; wind, NE. 10; visibility, 20 miles; blueness of sky, 5; polarization, 54 percent.
 Oct. 17: Temperature, 14° C.; wind, S. 9; visibility, 30 miles; blueness of sky, 5; polarization, 60 percent.
 Oct. 24: Temperature, 8° C.; wind, NW. 12; visibility, 50 miles; blueness of sky, 6; polarization, 65 percent.
 Oct. 25: Temperature, 8° C.; wind, N. 10; visibility, 50 miles; blueness of sky, 6; polarization, 62 percent.

TABLE 3.—Total, I_m and screened, I_v , I_r , solar radiation intensity measurements, obtained during October 1935, and determinations of the atmospheric turbidity factor β , and water-vapor content, w =depth in millimeters, if precipitated—Continued

BLUE HILL METEOROLOGICAL OBSERVATORY OF HARVARD UNIVERSITY

Date and hour angle, 1935	Solar altitude	Air mass	I_m	I_v	I_r	βI_{m-r}	βI_{v-r}	β_{mean}	$\frac{I_{w=0}}{1.94}$	$\frac{I_{w=0}-I_m}{1.94}$	w	Air-mass type	
									Percentage of solar constant				
<i>Oct. 1</i>													
4:16 a. m.	17 09	3.36	1.032	gr. cal.	0.705	0.570	0.024	0.062	0.043	65.3	12.2	6.5	
2:46 a. m.	30 14	1.98	1.235	gr. cal.	.774	.615	.022	.074	.048	75.0	11.3	7.8	
0:48 a. m.	43 29	1.45	1.320	gr. cal.	.850	.678	.040	.092	.070	78.2	8.3	6.8	
7:16 p. m.	35 18	1.73	1.220	gr. cal.	.825	.635	.064	.045	.054	78.0	15.2	11.5	
4:31 p. m.	14 10	4.05	.849	gr. cal.	.635	.501	.047	.069	.053	56.8	13.1	6.3	
<i>Oct. 2</i>													
3:21 a. m.	25 40	2.30	1.330	.880	.692	.004	.024	.014	80.2	11.6	6.4	P _c	
1:31 a. m.	43 54	1.44	1.450	.950	.760	.028	.056	.042	81.0	6.7	5.3		
1:22 p. m.	44 07	1.44	1.365	.900	.705	.028	.049	.038	82.0	11.6	9.4		
<i>Oct. 3</i>													
1:59 a. m.	36 40	1.67	1.310	.855	.676	.025	.049	.037	80.1	12.6	9.5	N _{sc} , N _{rr} aloft.	
3:21 p. m.	23 45	2.48	1.070	.735	.585	.049	.067	.058	68.1	13.6	8.4		
<i>Oct. 4</i>													
1:37 a. m.	37 40	1.63	1.240	.830	.660	.050	.098	.074	73.3	10.2	7.8	P _c , N _{rr} aloft.	
0:09 p. m.	43 35	1.45	1.325	.890	.692	.041	.044	.042	80.7	12.4	10.3		
1:36 p. m.	37 50	1.63	1.370	.915	.726	.026	.050	.038	80.5	9.9	7.5		
3:23 p. m.	24 44	2.38	1.205	.850	.665	.033	.026	.030	75.5	13.4	8.5		
<i>Oct. 5</i>													
1:52 a. m.	36 49	1.67	1.420	.938	.735	.016	.037	.026	82.8	9.6	7.8	P _c , N _{rr} aloft.	
0:45 p. m.	43 04	1.46	1.375	.915	.720	.006	.053	.030	81.1	10.2	7.7		
2:44 p. m.	30 15	1.99	1.224	.845	.674	.018	.063	.040	76.0	12.9	9.1		
<i>Oct. 7</i>													
3:37 p. m.	21 02	2.77	1.175	.835	.675	.033	.047	.040	70.8	3.9	2.2	P _c	
<i>Oct. 8</i>													
4:12 a. m.	15 30	3.70	1.205	.850	.700	.045	.098	.072	55.1	7.0	3.6	N _{sc} , N _{rr} aloft.	
2:42 a. m.	29 38	2.02	1.329	.885	.700	.013	.041	.027	80.2	11.5	7.0		
2:27 a. m.	31 31	1.91	1.115	.775	.615	.070	.078	.074	70.2	13.2	9.3		
<i>Oct. 9</i>													
3:40 a. m.	20 34	2.82	1.250	.850	.685	.019	.039	.029	72.9	8.5	4.9	N _{sc} , N _{rr} .	
2:40 a. m.	29 32	2.02	1.342	.912	.725	.025	.027	.026	79.4	10.3	7.0		
1:34 a. m.	37 10	1.65	1.395	.935	.750	.011	.061	.036	80.0	8.1	6.1		
0:17 a. m.	41 42	1.52	1.405	.902	.749	.024	.053	.038	81.0	8.6	7.0		
2:18 p. m.	32 24	1.87	1.295	.883	.700	.034	.053	.044	76.9	10.1	7.1		
<i>Oct. 10</i>													
4:14 a. m.	14 54	3.84	1.200	.880	.700	.000	.018	.009	76.6	14.8	7.4	N _{sc} , N _{rr} aloft.	
2:55 a. m.	27 01	2.20	1.380	.970	.742	.001	.008	.005	82.8	11.9	7.8		
1:04 a. m.	39 10	1.58	1.465	1.000	.778	.014	.027	.020	84.0	11.0	8.5		
0:52 p. m.	39 52	1.56	1.420	.971	.742	.016	.021	.018	85.9	12.3	9.7		
2:12 p. m.	32 46	1.84	1.330	.930	.732	.039	.032	.036	78.9	15.3	11.0		
4:00 p. m.	17 00	3.39	.950	.730	.598	.075	.069	.072	57.5	8.5	4.5		
<i>Oct. 12</i>													
2:49 a. m.	27 45	2.18	1.305	.925	.740	.034	.033	.034	74.8	7.8	5.1	N _{sc} , N _{rr} aloft.	
0:06 a. m.	40 32	1.54	1.375	.965	.755	.030	.036	.033	82.5	12.4	9.5		
1:03 p. m.	38 30	1.60	1.350	.938	.735	.012	.019	.016	84.6	15.1	11.7		
2:15 p. m.	31 45	1.90	1.280	.895	.725	.054	.071	.062	72.3	6.6	4.6		
3:40 p. m.	19 43	2.95	1.010	.755	.622	.105	.152	.128	64.0	12.2	6.9		
<i>Oct. 13</i>													
3:35 a. m.	20 07	2.89	1.265	.895	.724	.018	.041	.030	71.7	6.8	3.7	N _{sc} , N _{rr} aloft.	
1:42 p. m.	35 01	1.74	1.365	.950	.724	.083	.191	.137	86.5	16.5	12.3		
1:07 p. m.	31 25	1.92	1.295	.900	.700	.036	.047	.042	73.2	7.0	4.8		
<i>Oct. 14</i>													
3:19 a. m.	22 21	2.62	1.026	.735	.605	.067	.086	.076	62.8	11.2	6.7	N _{sc} , N _{rr} aloft.	
1:48 a. m.	26 57	2.20	1.180	.820	.665	.048	.063	.056	71.3	10.8	7.0		
0:53 a. m.	38 41	1.60	1.240	.845	.651	.050	.059	.054	77.3	13.7	10.1		
3:13 p. m.	23 15	2.53	.860	.625	.506	.104	.115	.110	53.1	9.0	5.5		
<i>Oct. 15</i>													
4:08 a. m.	14 17	3.99	.855	.580	.500	.061	.017	.039	56.0	12.2	6.0	N _{sc} , T _s aloft.	
0:22 a. m.	39 10	1.59	1.377	.925	.717	.024	.026	.025	83.0	12.4	9.6		
0:03 p. m.	39 26	1.57	1.360	.900	.720	.023	.075	.049	78.4	8.7	6.6		
1:58 p. m.	32 14	1.87	1.285	.891	.694	.039	.028	.034	74.2	8.4	6.5		
3:29 a. m.	20 34	2.82	1.070	.765	.600	.052	.055	.054	65.4	10.6	6.3		
<i>Oct. 16</i>													
2:40 a. m.	26 01	2.28	1.350	.900	.724	.033	.040	.036	76.7	7.6	5.0	P _c	
0:46 a. m.	38 00	1.62	1.430	.918	.758	.023			82.3	9.1	7.2		
1:32 p. m.	34 55	1.74	1.317	.926	.725	.049	.036	.038	78.7	11.2	8.5		
3:08 p. m.	23 55	2.45	1.100	.783	.634	.061	.075	.068	66.1	9.8	7.2		
<i>Oct. 17</i>													
3:49 a. m.	18 07	3.19	1.295	.905	.726	.081	.029	.055	76.4	10.4	5.6	N _{sc} , T _s aloft.	
2:20 a. m.	29 33	2.42	1.375	.924	.738	.014	.059	.036	78.1	7.7	5.4		
0:51 a. m.	37 05	1.65	1.335	.906	.734	.049	.100	.074	73.0	4.7	3.7		
3:07 p. m.	22 20	2.62	1.262	.875	.693	.018	.047	.032	73.3	8.7	5.4		
<i>Oct. 19</i>													
3:29 a. m.	19 30	2.92	1.200	.820	.676	.021	.061	.041	68.0	8.7	5.1	N _{sc}	
2:39 a. m.	26 41	1.95	1.265	.876	.700	.045	.058	.052	74.8	10.1	7.2		
0:23 p. m.	37 51	1.63	1.342	.871	.700	.028	.075	.052	77.3	8.7	6.8		
<i>Oct. 20</i>													
3:24 a. m.	19 52	2.92	1.185	.830	.630	.024	.032	.023	74.3	13.2	7.7	N _{sc}	
2:17 a. m.	43 47	1.75	1.285	.810	.685	.049	.082	.051	76.1	12.5	9.5		
1:10 p. m.	37 34	1.63	1.248	.825	.649	.041	.066	.054	75.8	12.9	9.8		

TABLE 3.—Total, I_m and screened, I_y , I_r , solar radiation intensity measurements, obtained during October 1935, and determinations of the atmospheric turbidity factor β , and water-vapor content, w =depth in millimeters, if precipitated—Continued

BLUE HILL METEOROLOGICAL OBSERVATORY OF HARVARD UNIVERSITY

Date and hour angle, 1935	Solar altitude	Air mass	I_m	I_y	I_r	βI_{m-r}	βI_{y-r}	β_{mean}	$\frac{I_{w=0}}{1.94}$	$\frac{I_{w=0}-I_m}{1.94}$	w	Air-mass type	
									Percentage of solar constant				
Oct. 21													
0:58 p. m.	° 35	m 35	gr. cal. 1.77	gr. cal. 1.202	gr. cal. 0.634	0.053	0.087	0.070	73.7	12.3	mm 9.4	N _{PA} , T _M aloft.	
2:25 p. m.	28	37	2.08	1.002	.750	.600	.122	.093	67.0	15.9	11.0		
Oct. 24													
3:28 a. m.	18	08	3.21	1.224	.860	.727	.034	.076	.055	65.2	2.8	1.6	N _{rc} .
1:37 a. m.	31	54	1.89	1.375	.931	.762	.034	.045	.040	73.5	3.4	2.5	
0:59 p. m.	33	42	1.80	1.375	.949	.755	.030	.055	.042	78.1	8.0	6.0	
1:56 p. m.	29	14	2.05	1.325	.900	.727	.029	.055	.042	75.5	8.0	5.6	
Oct. 25													
3:19 a. m.	19	12	3.05	1.251	.882	.720	.022	.058	.040	70.2	5.9	3.4	N _{rc} .
Oct. 27													
2:44 a. m.	23	23	2.52	1.110	.784	.610	.056	.076	.066	66.5	10.0	6.3	P _C , N _{re} aloft.
0:33 a. m.	34	39	1.76	1.202	.824	.772	.078	.112	.094	69.5	8.5	6.4	
Oct. 28													
3:47 a. m.	14	00	4.08	0.998	.698	.575	.024	.056	.040	62.3	11.5	5.8	N _{rc} , T _E aloft.

Atmospheric conditions during solar radiation measurements, Blue Hill Observatory of Harvard University

Date and time from apparent noon	Air temperature	Wind, Beaufort scale	Visibility (scale 0-10)	Sky-blueness	Cloudiness and remarks
October 1935	°C				
1; 2:28 a. m.	14.4	S 4	8	7	1 ACu, few Ci, mod. haze.
1; 0:18 a. m.	17.3	S 4	8	7	1 ACu, few Ci, mod. haze.
1; 3:12 p. m.	15.6	S 5	9	7	1 Ci, ACu, Cu.
4; 0:30 a. m.	13.3	WSW 4	9	5	T FrCu.
4; 1:33 p. m.	14.2	WSW 3	9	5	T Cu.
4; 3:37 p. m.	13.9	WNW 1	9	5	1 Cu.
5; 4:32 a. m.	3.2	WSW 5	9	8	Mod. water haze.
7; 4:04 p. m.	7.9	NNW 4	9	5	2 Ci, ACu.
8; 2:36 a. m.	6.9	NNE 2	8	5	T Ci, Cu, mod. haze.
8; 3:11 p. m.	10.6	E 2	8	6	T Cu, mod. haze.
9; 3:05 a. m.	10.0	SE 2	8	6	1 Ci, ACu, Cu, mod-heavy haze.
9; 0:08 p. m.	12.0	SE 2	9	6	1 Ci, ACu, Cu.
10; 2:46 a. m.	10.6	SSW 1	8	6	T Ci, Cu, mod-heavy haze.
10; 0:22 p. m.	16.1	Sx E 2	8	6	T Ci, mod. haze.
10; 4:08 p. m.	16.1	Sx W 2	8	6	1 Ci, mod. haze.
12; 3:48 a. m.	7.8	NW 2	8	5	T ACu, mod. haze.
12; 1:11 p. m.	12.6	NNW 3	9	8	1 Cu.
12; 3:45 p. m.	13.4	NW 2	9	8	Few Cu, light haze.
13; 2:52 a. m.	8.6	W 3	8	8	Few Ci, heavy haze.
13; 1:38 p. m.	16.2	S 3	9	9	2 Ci, light haze.
14; 2:38 a. m.	14.2	SW 4	6	7	Heavy water haze.
14; 0:21 a. m.	18.9	Sx W 5	7	8	Mod. water haze.
14; 3:45 p. m.	19.4	SWx S 5	7	8	Mod. to heavy water haze.
15; 1:58 p. m.	13.8	NW 6	9	10	Few Ci, Few Cu.
16; 2:30 a. m.	5.7	N 4	8	8	1 Ci, mod. haze.
16; 3:15 p. m.	10.0	ENE 2	9	8	Mod. haze.
17; 2:07 a. m.	12.7	SSW 4	7	9	Few Ci, mod-heavy haze.
17; 3:00 p. m.	15.4	SW 4	8	9	Few Ci, mod. haze.
17; 4:40 p. m.	15.4	S 4	8	9	Few Ci, mod. haze.
19; 2:27 a. m.	12.2	NW 5	8	10	Few Ci, few ACu, mod. haze.
19; 1:00 p. m.	16.1	NW 4	9	9	1 Ci, light haze.
20; 2:04 a. m.	15.8	WNW 6	8	9	Moderate haze.
20; 1:44 p. m.	18.4	WNW 5	9	9	Light haze.
21; 1:34 p. m.	16.7	SSE 3	9	8	3 Ci, few ACu, mod. haze.
21; 4:34 p. m.	13.9	S 3	8	8	1 Ci.
24; 3:45 a. m.	4.6	NW 4	9	8	1 Ci, 1 ACu, few Cu.
24; 1:37 p. m.	8.7	NW 4	10	8	Few Ci, few Cu.
24; 2:10 p. m.	8.8	NW 5	10	7	Few CiSt, few Cu.
24; 3:34 p. m.	8.7	NW 5	10	8	Few CiSt, few FrCu.
25; 3:07 a. m.	1.7	NW 2	8	7	Few Ci, few ACu, heavy haze.
25; 2:50 a. m.	1.8	NW 2	8	7	Few Ci, few ACu, heavy haze.
52; 1:23 p. m.	7.2	NW 2	8	7	Few Ci, 3 ACu, mod. haze.
28; 2:45 a. m.	13.9	SW 3	7	7	2 Ci, heavy water haze.

POSITIONS AND AREAS OF SUN SPOTS

[Communicated by Capt. J. F. Hellweg, U. S. Navy, Superintendent U. S. Naval Observatory. Data furnished by the U. S. Naval Observatory in cooperation with Harvard and Mount Wilson Observatories. The difference in longitude is measured from the central meridian, positive west. The north latitude is positive. Areas are corrected for foreshortening and are expressed in millionths of the sun's visible hemisphere. The total area for each day includes spots and groups]

Date	Eastern standard time	Heliographic			Area	Total area for each day	Observatory
		Diff. in longitude	Longitude	Latitude			
1935	h. m.	°	°	°			
Oct 1	11 2	-68.0	78.9	-18.0	185		U. S. Naval.
		-37.0	104.9	-17.5	31		
		-21.0	125.9	+22.0	31		
		-18.0	128.9	+14.0	46		
		-13.0	133.9	-19.5	139		
		-9.0	137.9	+22.0	62		
		+31.0	177.9	-26.0	62	556	
		+54.0	79.3	-17.0	370		
		-23.0	110.3	-17.5	93		
		-8.5	124.8	+21.0	31		
		-4.5	128.8	+14.0	123		
		0.0	133.3	-19.5	185		
		+5.0	138.3	+22.5	46		
		+45.0	178.3	-26.0	62	910	
		-39.5	81.0	-17.0	278		
		-11.0	109.5	-18.5	31		
		+8.0	128.5	+13.0	123		
		+12.0	132.5	-20.0	154		
		+18.0	138.5	+22.5	39	625	
		-79.0	28.3	-19.0	31		
		-26.0	81.3	-17.0	185		
		+22.0	129.3	+13.0	123		
		+25.0	132.3	-20.0	123		
		+30.0	137.3	+22.0	31	493	
		-63.0	30.8	-19.0	46		
		-16.0	77.8	-17.0	93		
		-6.0	87.8	-17.0	62		
		+3.0	96.8	-22.5	31		
		+36.0	129.8	+12.0	123		
		+40.0	133.8	-20.5	139		
		+44.0	137.8	+21.5	31	525	
		-50.0	29.9	-19.0	14		
		-2.0	77.9	-18.0	30		
		+8.0	87.9	-18.0	15		
		+16.0	95.9	-22.0	14		
		+51.0	130.9	+12.0	22		
		+55.0	134.9	-21.0	139		
		+58.0	137.9	+22.0	10	244	